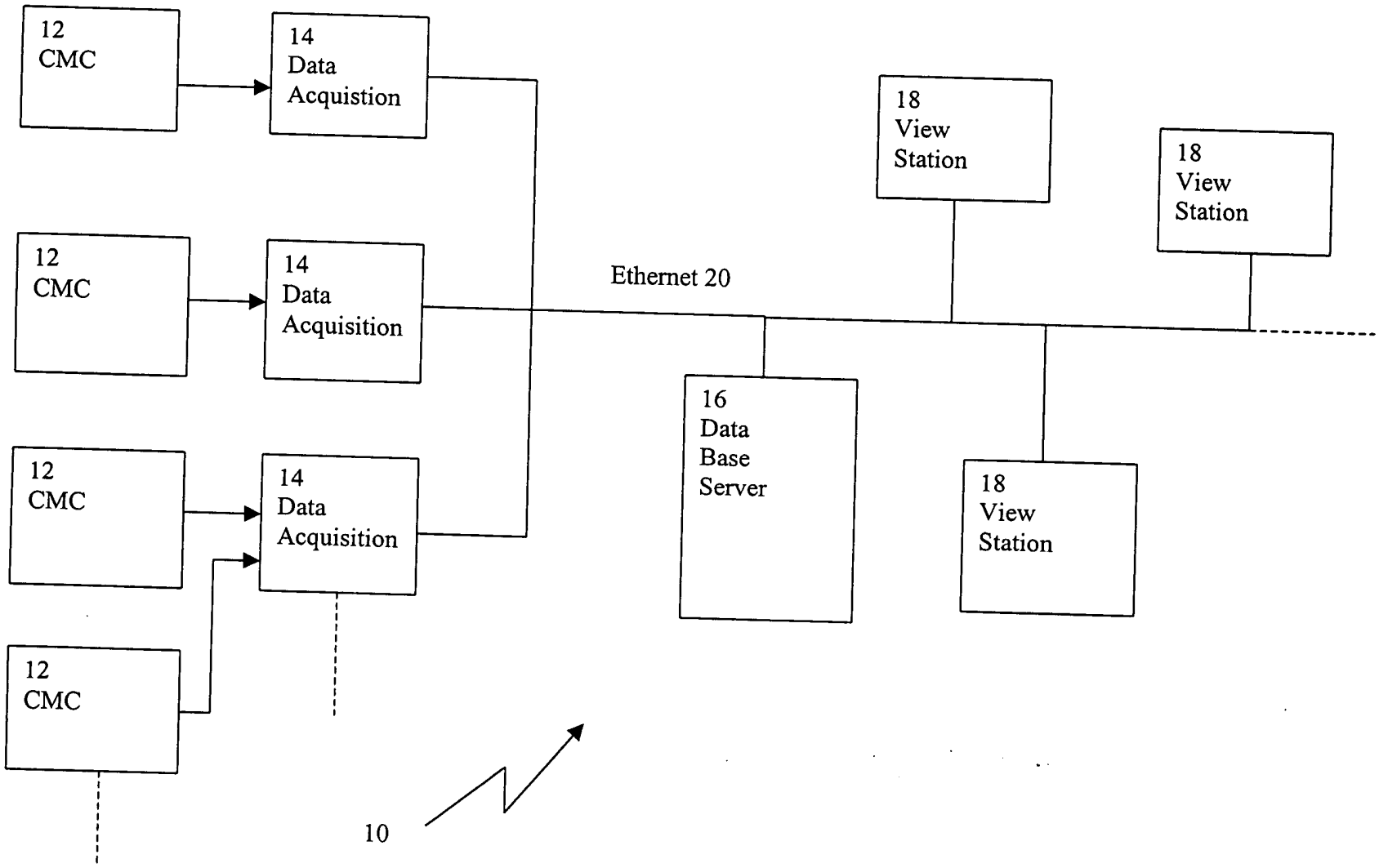

12
CMC
14
Data
Acquistion
12
CMC
14
Data
Acquisition
12
CMC
14
Data
Acquisition
12
CMC
10
Ethernet 20
16
Data
Base
Server
18
View
Station
18
View
Station
18
View
Station

Fig. 1

DATA COLLECTION MODE

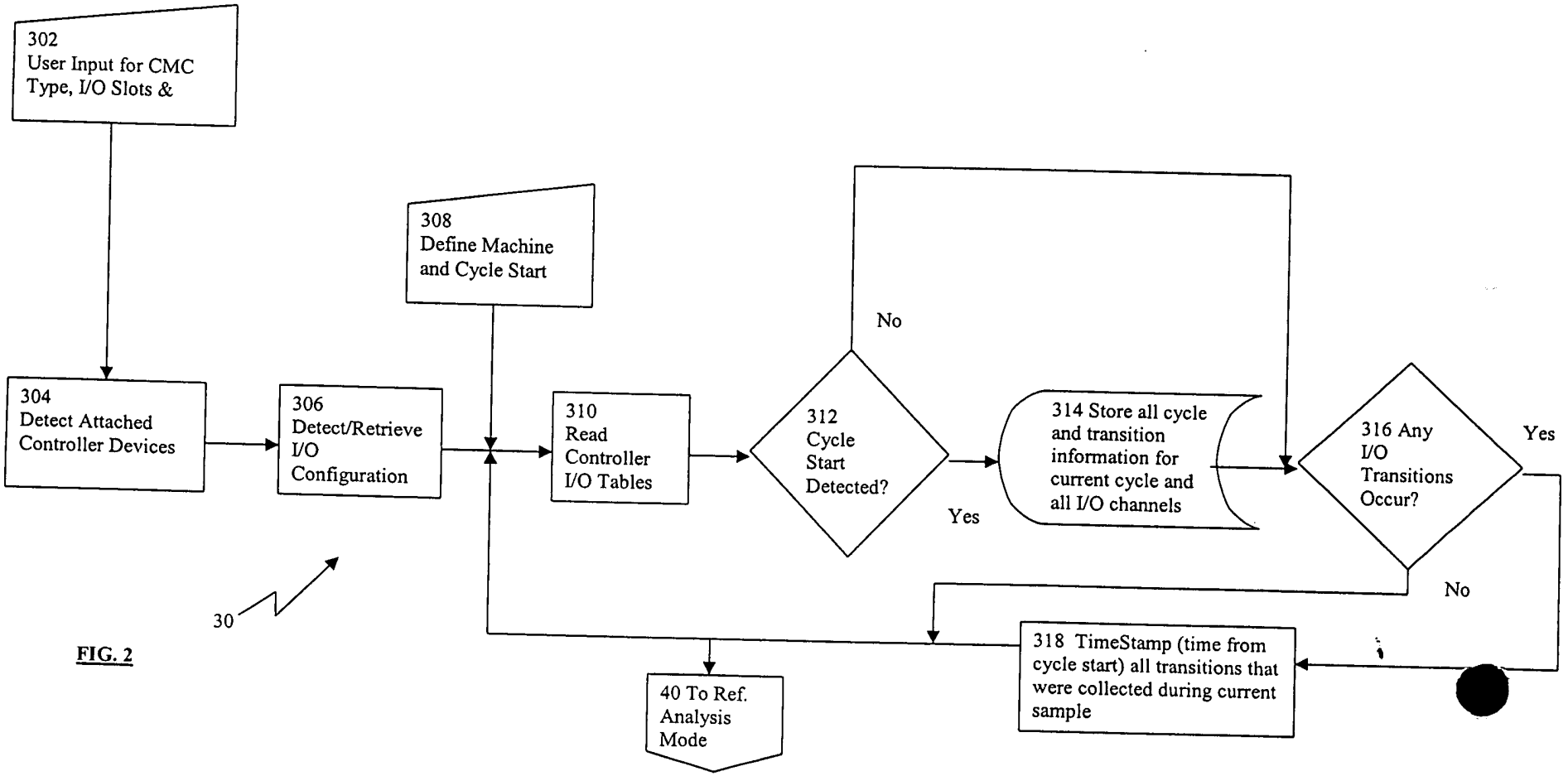


FIG. 2

Reference Analysis Mode

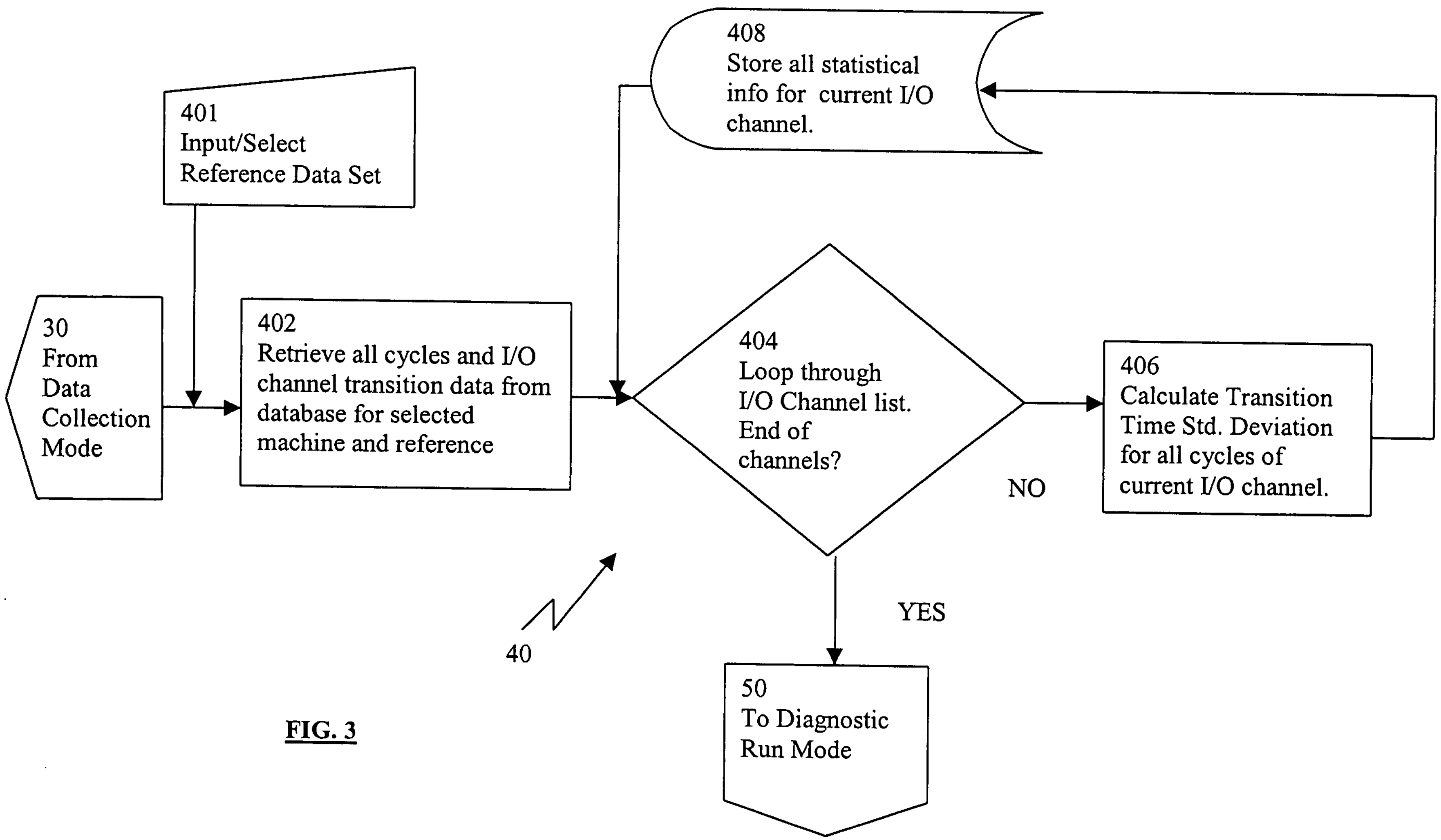


FIG. 3

DIAGNOSTIC RUN MODE

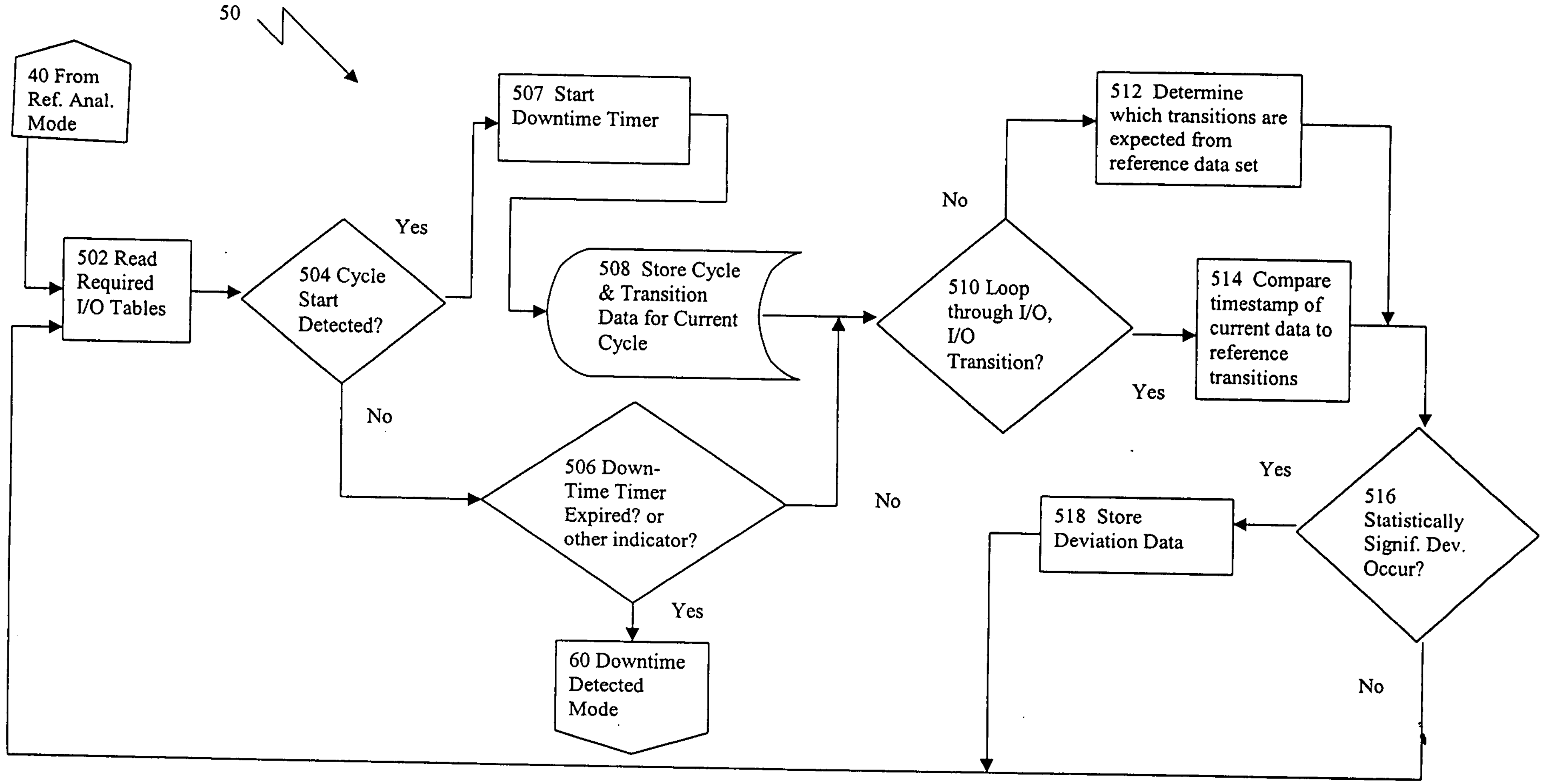


Fig. 4

DOWNTIME DETECTED MODE

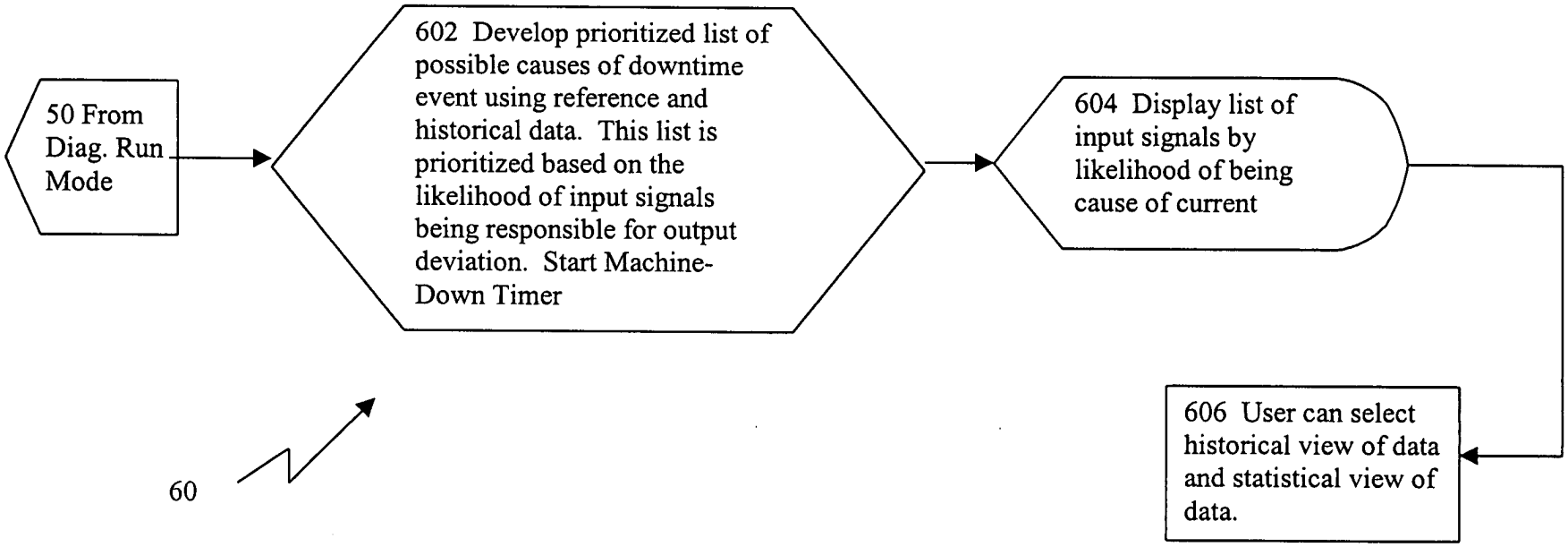


FIG. 5

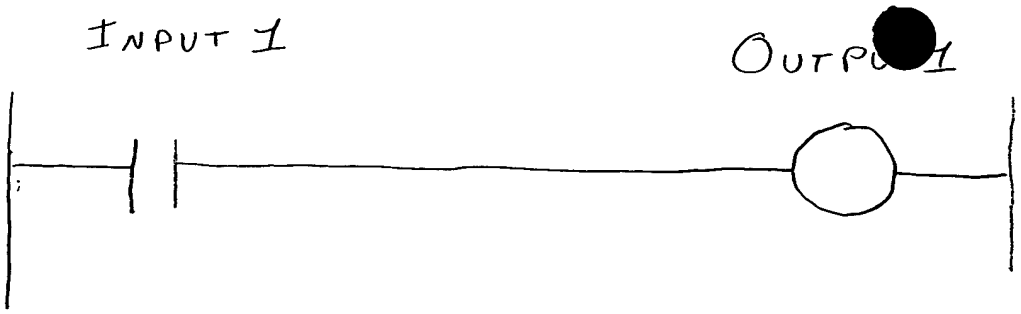


FIG. 6

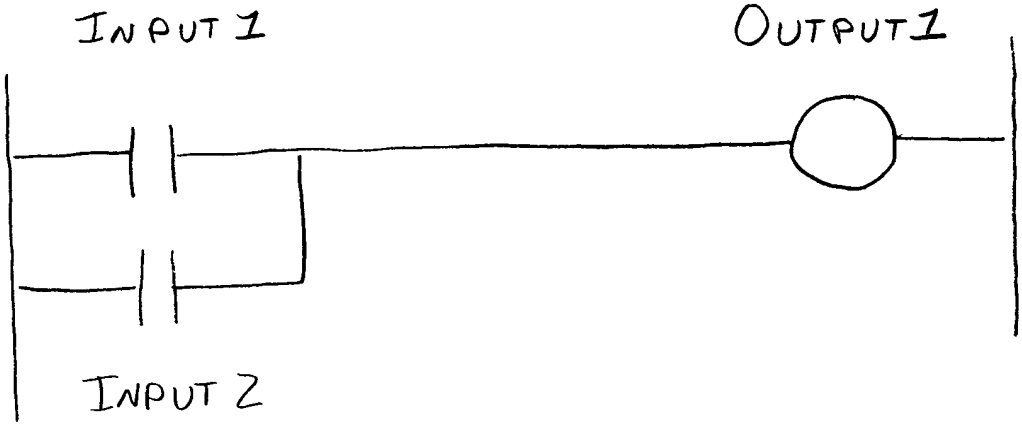


FIG. 7

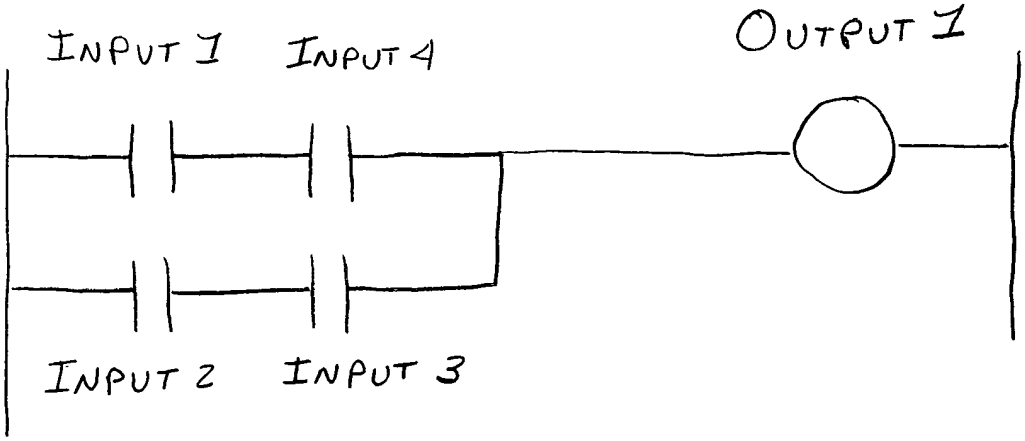
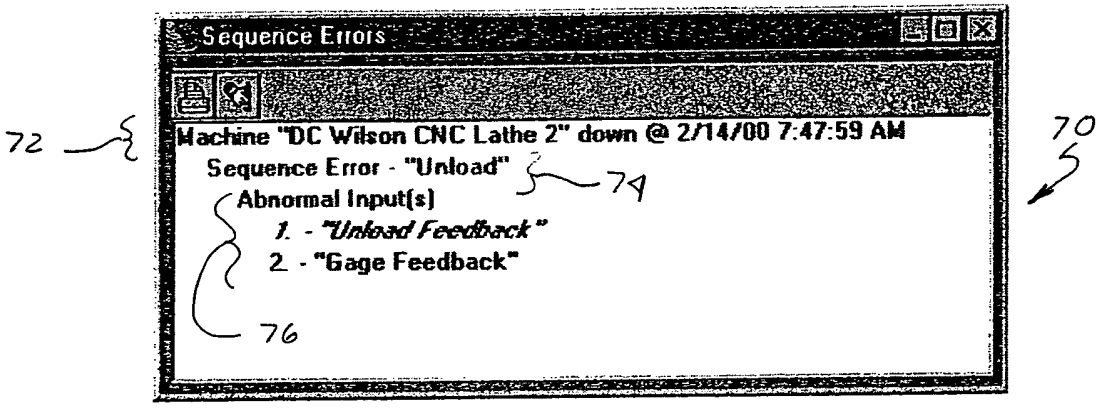


FIG. 8


Sequence Errors
Machine "DC Wilson CNC Lathe 2" down @ 2/14/00 7:47:59 AM
Sequence Error - "Unload"
Abnormal Input(s)
1. - "Unload Feedback"
2. - "Gage Feedback"
72
74
76
70

F16.9

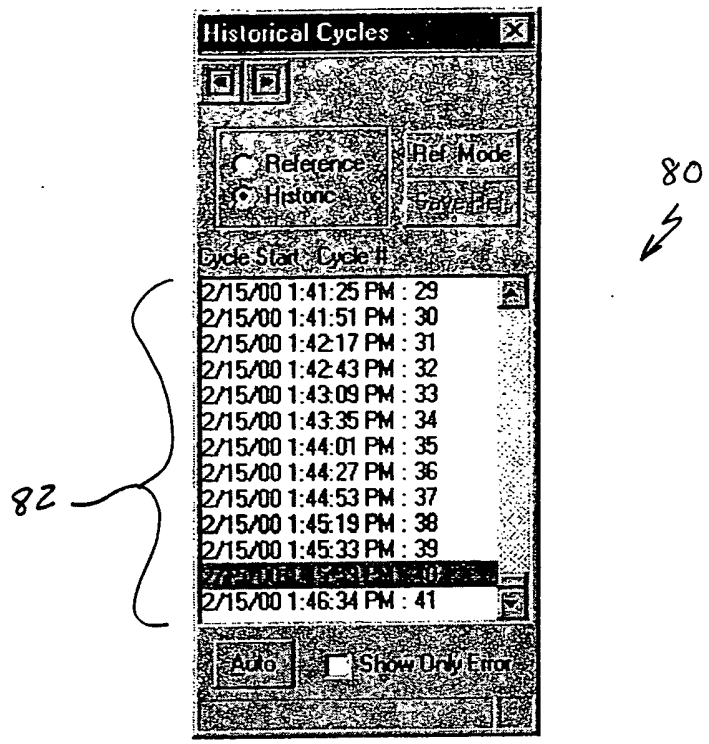

Historical Cycles
Reference
Historic
Ref. Mode
Cycle Start
Cycle #
2/15/00 1:41:25 PM : 29
2/15/00 1:41:51 PM : 30
2/15/00 1:42:17 PM : 31
2/15/00 1:42:43 PM : 32
2/15/00 1:43:09 PM : 33
2/15/00 1:43:35 PM : 34
2/15/00 1:44:01 PM : 35
2/15/00 1:44:27 PM : 36
2/15/00 1:44:53 PM : 37
2/15/00 1:45:19 PM : 38
2/15/00 1:45:33 PM : 39
2/15/00 1:46:34 PM : 41
Auto
Show Only Error
80
82

FIG. 10

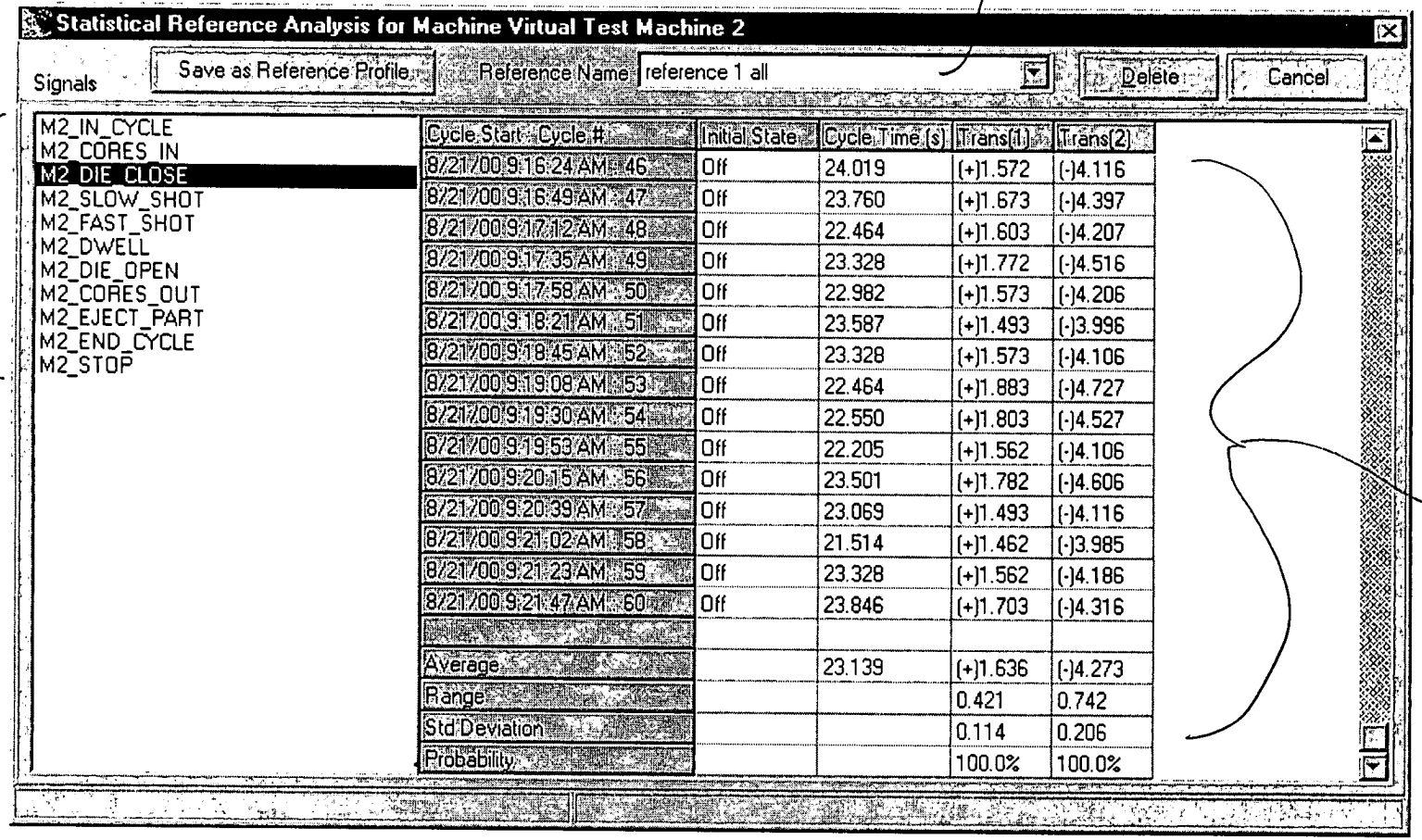

Statistical Reference Analysis for Machine Virtual Test Machine 2
Signals
Save as Reference Profile
Reference Name
reference 1 all
Delete
Cancel
M2_IN_CYCLE
M2_CORES_IN
M2_DIE_CLOSE
M2_SLOW_SHOT
M2_FAST_SHOT
M2_DWELL
M2_DIE_OPEN
M2_CORES_OUT
M2_EJECT_PART
M2_END_CYCLE
M2_STOP
Cycle Start - Cycle #
Initial State
Cycle Time (s)
Trans(1)
Trans(2)
8/21/00 9:16:24 AM - 46 Off 24.019 (+)1.572 (-)4.116
8/21/00 9:16:49 AM - 47 Off 23.760 (+)1.673 (-)4.397
8/21/00 9:17:12 AM - 48 Off 22.464 (+)1.603 (-)4.207
8/21/00 9:17:35 AM - 49 Off 23.328 (+)1.772 (-)4.516
8/21/00 9:17:58 AM - 50 Off 22.982 (+)1.573 (-)4.206
8/21/00 9:18:21 AM - 51 Off 23.587 (+)1.493 (-)3.996
8/21/00 9:18:45 AM - 52 Off 23.328 (+)1.573 (-)4.106
8/21/00 9:19:08 AM - 53 Off 22.464 (+)1.883 (-)4.727
8/21/00 9:19:30 AM - 54 Off 22.550 (+)1.803 (-)4.527
8/21/00 9:19:53 AM - 55 Off 22.205 (+)1.562 (-)4.106
8/21/00 9:20:15 AM - 56 Off 23.501 (+)1.782 (-)4.606
8/21/00 9:20:39 AM - 57 Off 23.069 (+)1.493 (-)4.116
8/21/00 9:21:02 AM - 58 Off 21.514 (+)1.462 (-)3.985
8/21/00 9:21:23 AM - 59 Off 23.328 (+)1.562 (-)4.186
8/21/00 9:21:47 AM - 60 Off 23.846 (+)1.703 (-)4.316
Average 23.139 (+)1.636 (-)4.273
Range 0.421 0.742
Std Deviation 0.114 0.206
Probability 100.0% 100.0%
88
90
86
92

FIG. 11

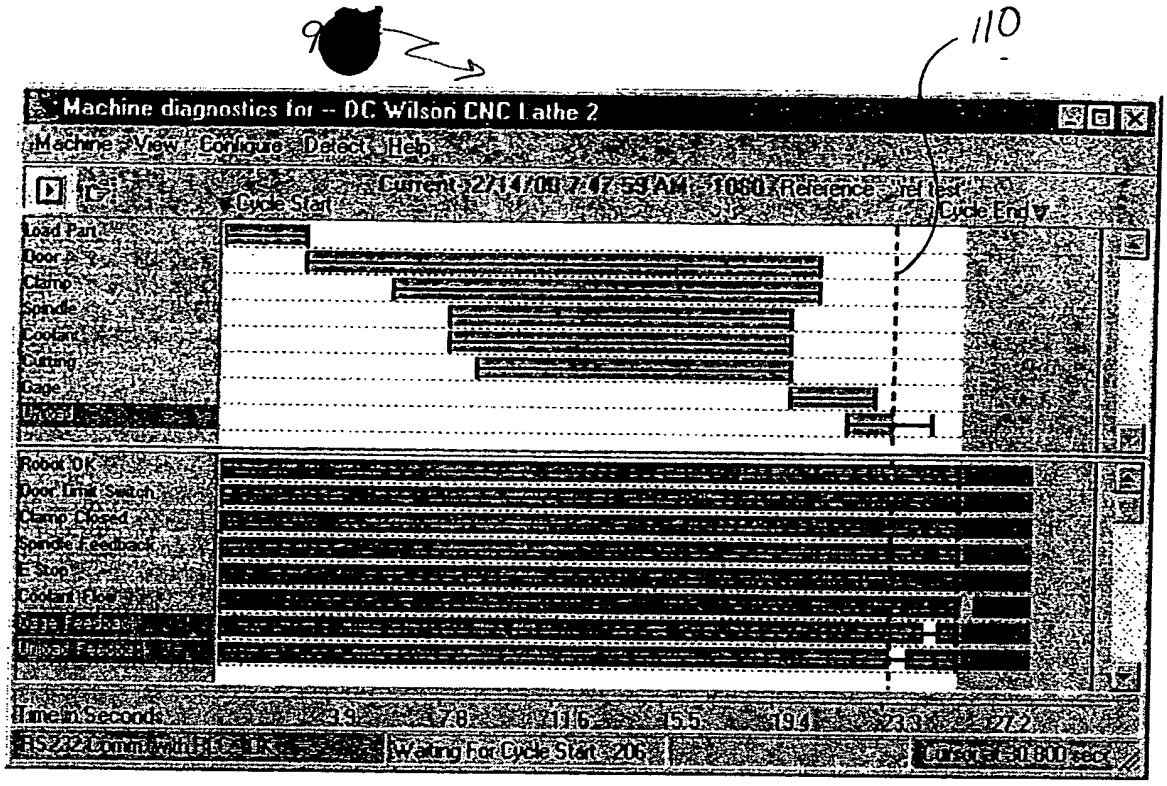

Machine diagnostics for -- DC Wilson CNC Lathe 2
Machine View Configure Detect Help
Cycle Start
Cycle End
Load Part
Door
Clamp
Spindle
Coolant
Cutting
Gage
Unload
Robot OK
Door Limit Switch
Clamp Closed
Spindle Feedback
E Stop
Coolant Flow
Gage Feedback
Unload Feedback
Time in Seconds
RS232 Comm with PLC OK
Waiting For Cycle Start
Cursor at 0.800 secs

FIG. 13

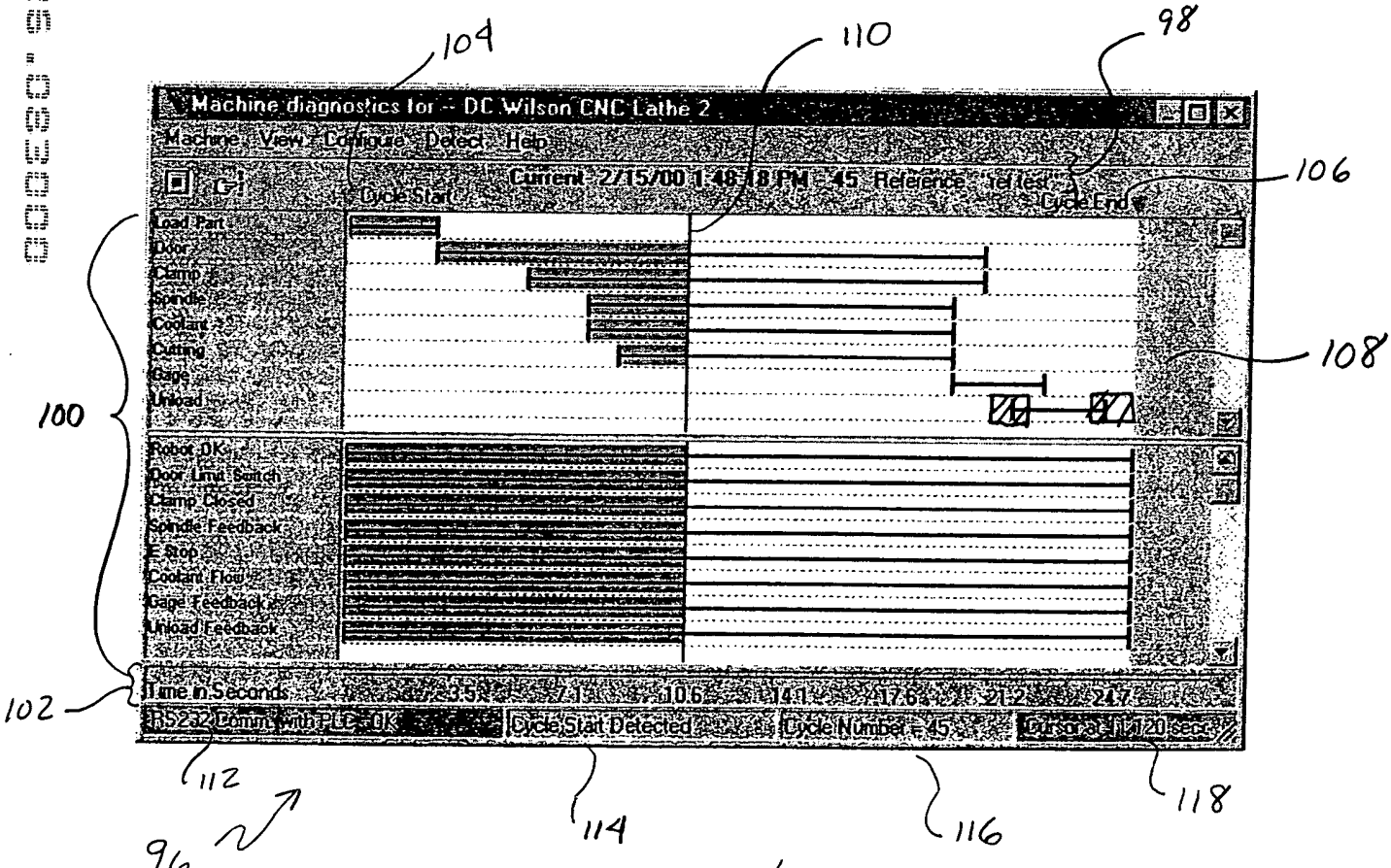

Machine diagnostics for -- DC Wilson CNC Lathe 2
Machine View Configure Detect Help
Current 2/15/00 1:48:18 PM 45 Reference ref test
Cycle Start
Cycle End
Load Part
Door
Clamp
Spindle
Coolant
Cutting
Gage
Unload
Robot OK
Door Limit Switch
Clamp Closed
Spindle Feedback
E Stop
Coolant Flow
Gage Feedback
Unload Feedback
Time in Seconds
RS232 Comm with PLC OK
Cycle Start Detected
Cycle Number = 45
Cursor at 1.120 secs
100
102
104
106
108
110
112
114
116
118
96
98

FIG. 12

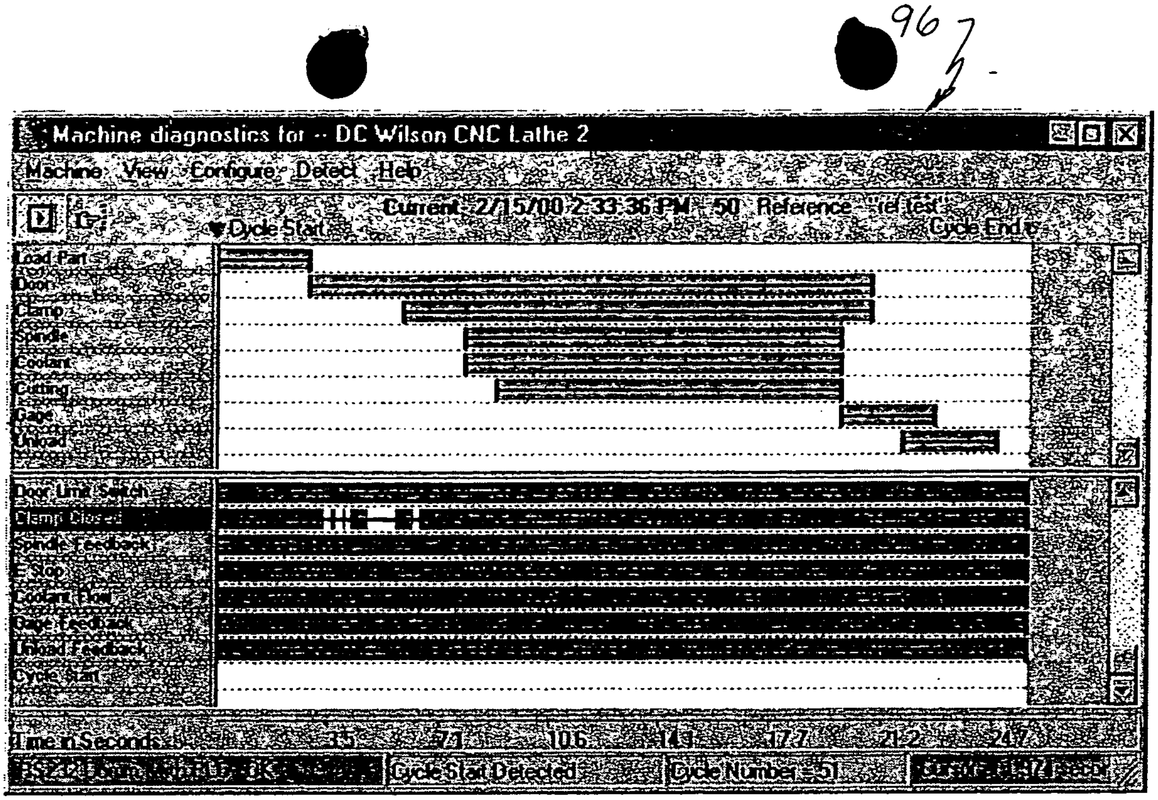
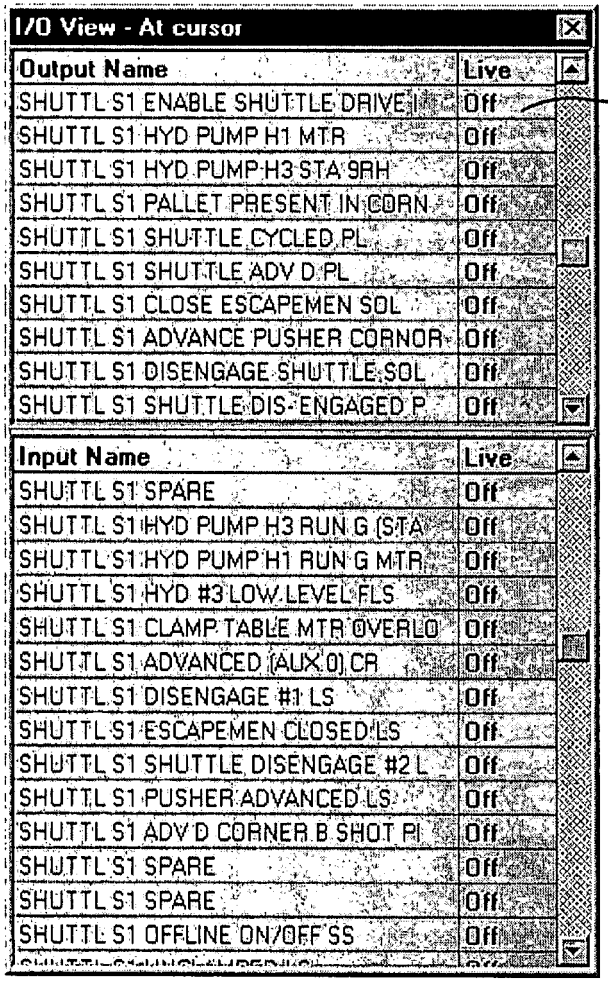

96
Machine diagnostics for -- DC Wilson CNC Lathe 2
Machine View Configure Detect Help
Current: 2/15/00 2:33:36 PM 50 Reference ref test
Cycle Start
Cycle End
Load Part
Door
Clamp
Spindle
Coolant
Cutting
Gage
Unload
Door Limit Switch
Clamp Closed
Spindle Feedback
E-Stop
Coolant Flow
Gage Feedback
Unload Feedback
Cycle Start
Time in Seconds
3.5
7.1
10.6
14.1
17.7
21.2
24.7
Cycle Start Detected
Cycle Number = 51

FIG. 14



122

124

120

FIG. 15

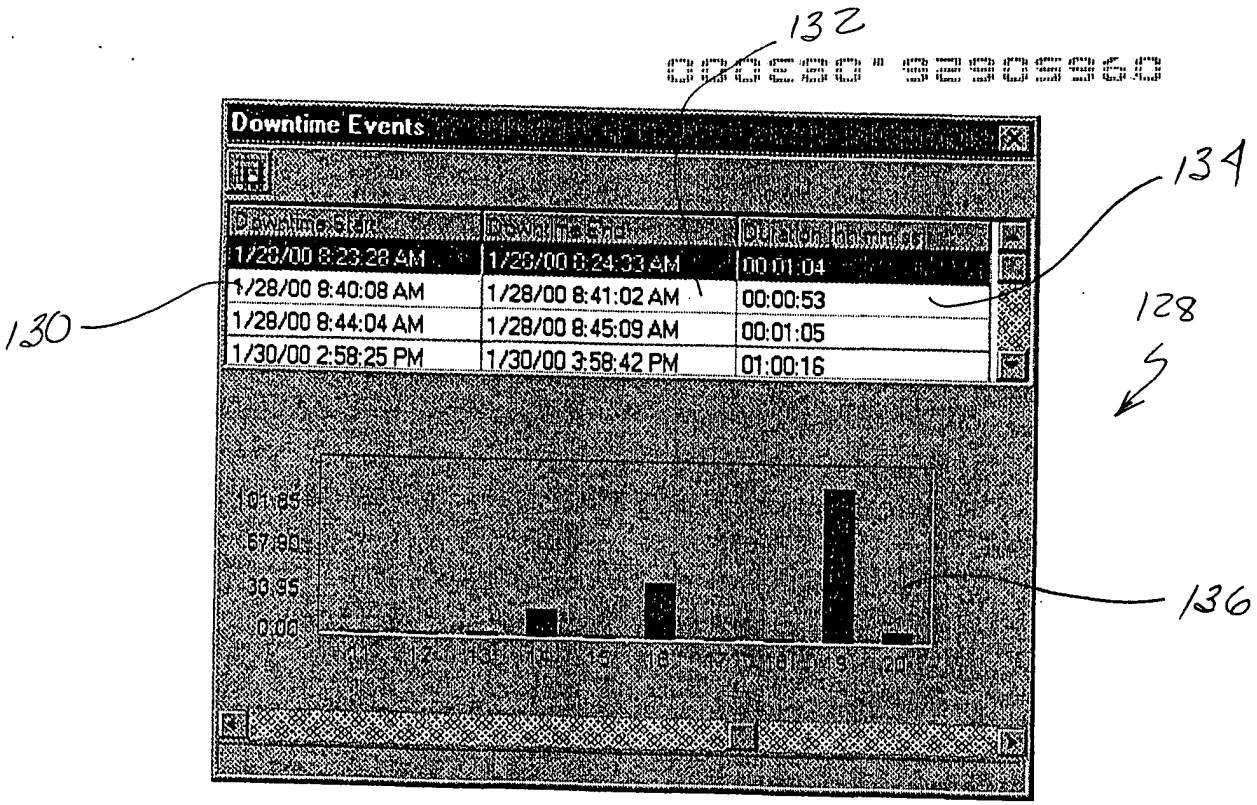

132
Downtime Events
Downtime Start
Downtime End
Duration
1/28/00 8:23:28 AM
1/28/00 8:24:33 AM
00:01:04
1/28/00 8:40:08 AM
1/28/00 8:41:02 AM
00:00:53
1/28/00 8:44:04 AM
1/28/00 8:45:09 AM
00:01:05
1/30/00 2:58:25 PM
1/30/00 3:58:42 PM
01:00:16
130
134
128
136
101.85
67.90
33.95
0.00

FIG. 16

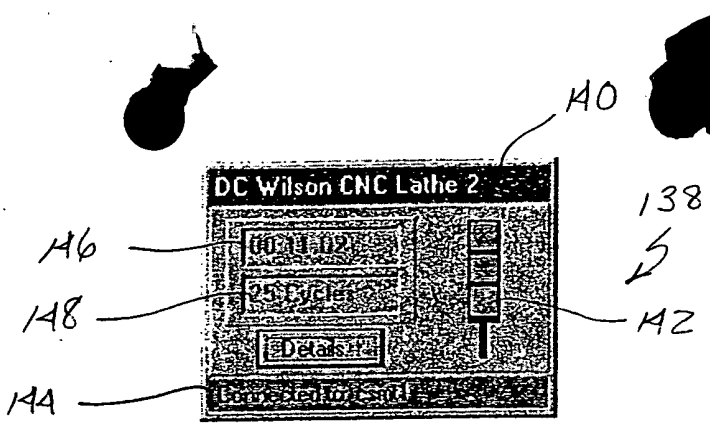
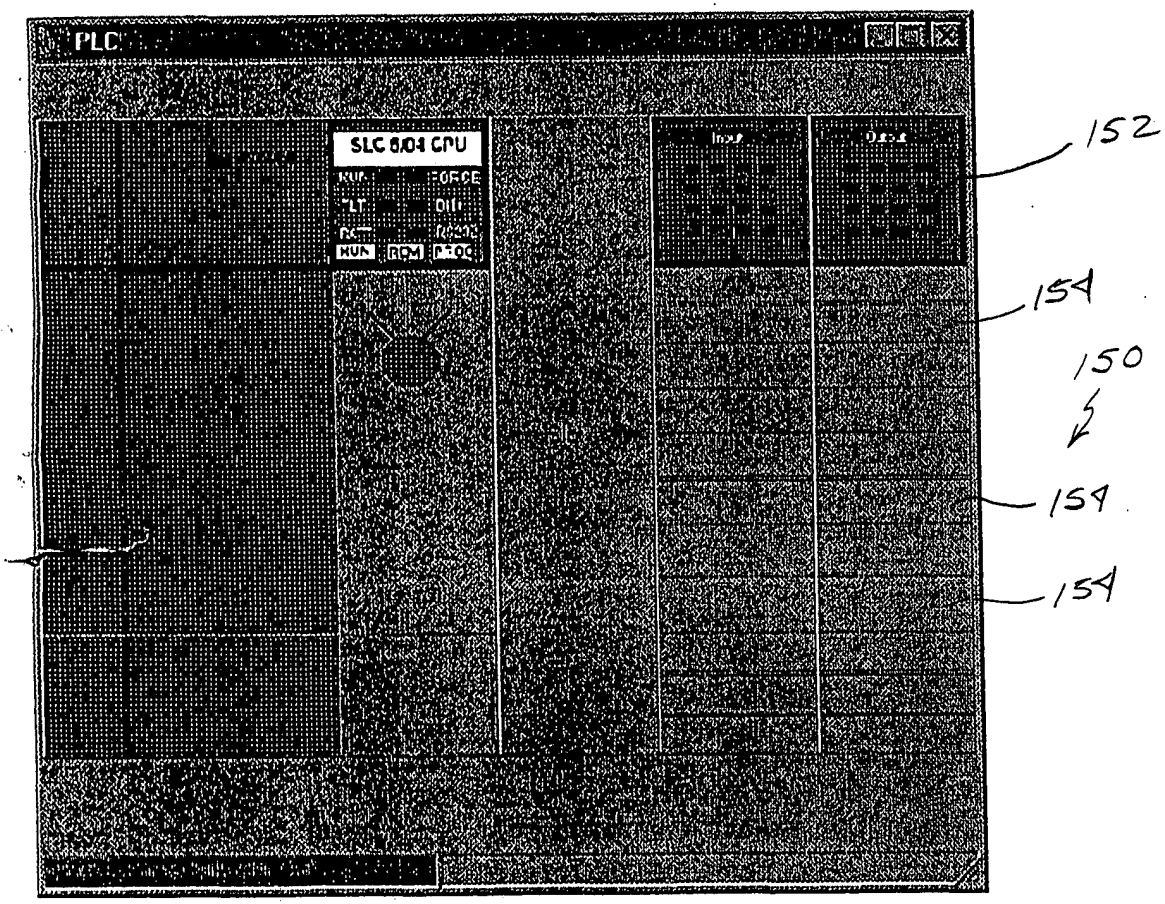


FIG. 17



F16.18